

# EASA-Study

– on the regulation of  
ground de-icing and anti-icing services  
in the EASA Member States –

ACI TOSC / Malta / November 2010

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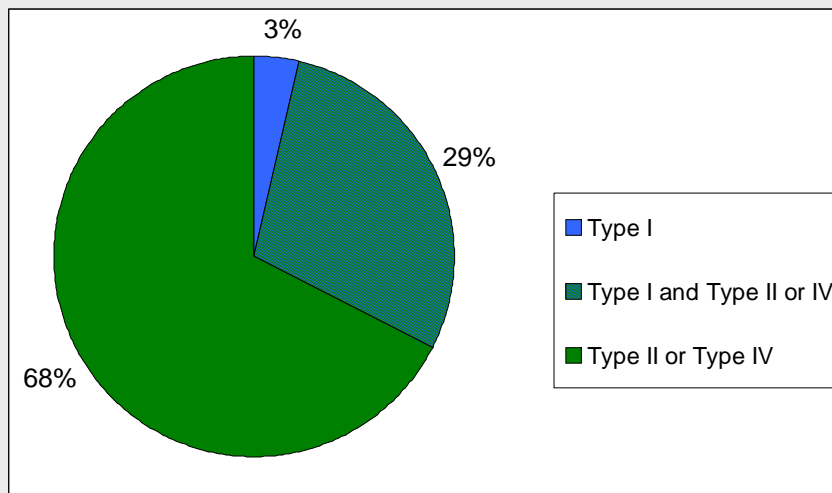
## /Introduction to the Problem

- The objective of ground de-icing and anti-icing is to:
  - remove frozen deposits from the critical surfaces, components, parts and areas of an aeroplane and
  - to prevent frozen deposits from re-forming again on the critical surfaces, within a limited timeframe, in order to allow the aeroplane to commence its takeoff safely.



## /Introduction to the Problem

- Common de-icing and anti-icing fluids are:
  - Un-thickened (Type I), or
  - Thickened (Type II, III, IV).
- Thickened fluids, because of their higher protection (Hold-Over Time – HOT), became very popular in the last few years, at the expense of the availability of un-thickened fluids.
- Example of availability of current fluids availability (BFU Report) at 86 Stations:



## /Introduction to the Problem

- Whilst these thickened fluids have brought about great benefits to the airline industry, they have also introduced an extra hazard because of their unfortunate characteristics, and the way they have been used:
  - De-icing and anti-icing fluids can leave dry **residues in** quiet **areas** inside the wings, control surfaces and other cavities.
  - These residues can **rehydrate and expand into a gel-like material** that can **freeze** during flight and **cause restrictions in the flight control systems.**



## /Introduction to the Problem

- Though **all aircraft types** are subject to fluid residues, there have been incidents where aircraft with **non-powered flight controls** have been critically affected:



Embraer 145



Avro 146-RJ series



Bombardier DHC-8

## /Recommendations emerging from Incidents

### ■ **AAIB Safety Recommendation 2005-135**

JAA in consultation with EASA issue safety documentation to **strongly encourage operators** of aircraft with **non-powered** flight controls to use **Type I** de-/anti-icing fluids, in preference to 'thickened' fluids, for de-icing.

### ■ **BFU Safety Recommendation 08/06**

**National AAIBs should recommend to their NAAs** that not only thickened (Type II or Type IV) but also un-thickened (**Type I**) **de-icing fluids are available (and applied)** on airports regularly used by aircraft with **non-powered** flying controls and offering de-icing services.

### ■ **BFU Safety Recommendation 07/06**

The Federal MoT should agree with the Länder aviation authorities responsible for the airports on a joint procedure to **urge service providers** responsible for deicing to **apply** not only thickened (Type II or Type IV) but **also un-thickened (Type I)** deicing fluids on airports regularly used by aircraft with non-powered flying controls and offering de-icing services.

### ■ **AAIB Safety Recommendation 2003-119**

The CAA require operators of aircraft with non-powered flying controls that are vulnerable ....., to establish engineering procedures for the inspection and removal of such residues from critical control surfaces.

### ■ **AAIB Safety Recommendation 2005-136**

Where the use of 'thickened' de-/anti-icing fluids is unavoidable, the JAA in consultation with EASA ensure that operators of aircraft with non-powered flight controls who use such fluids, invoke controlled maintenance procedures for the frequent inspection for accumulations of fluid residues and their removal.

### ■ **BFU Safety Recommendation 11/06**

EASA should impose a mandatory requirement on non-powered flying controlled aircraft manufacturers to develop reliable procedures for their aircraft types to ensure the identification and removal of rehydrated de-icing fluid residues in such time as to prevent any risk to the safety of flight operation.

### ■ **AAIB Safety recommendation 2005-148**

It is recommended that EASA consider the future need for the training and licensing of companies who provide a de-/anti-icing service, so that anti-icing fluids are applied in an appropriate manner on all aircraft types, but specifically to ensure that the entry of such fluids into flight control mechanisms and control surfaces is minimised.

### ■ **BFU Safety Recommendation 09/06**

Aircraft de-icing to maintain the airworthiness of aircraft during winter operation should be accomplished by certified and approved companies under the supervision of civil aviation authorities. If aircraft de-icing is not accomplished by an operator or an approved maintenance organisation the ground service "aircraft de-icing" should be subject to appropriate aeronautical regulation. EASA should agree with the European national authorities on establishing such regulations.

### ■ **AAIB Safety Recommendation 2003-82**

It is recommended that the CAA should consult with anti-icing fluid manufacturers with a view to encouraging them to develop fluids, with suitable 'holdover' times, that incorporate gelling agents that are not rehydratable.

### ■ **AAIB Safety Recommendation 2005-137**

It is recommended that EASA introduce certification requirements relating to de-/anti-icing fluids for use on aircraft with both powered and nonpowered flight controls.

■ ...

**AAIB:**  
Air Accidents  
Investigation Branch

**JAA:**  
Joint Aviation Authorities

**EASA:**  
European Aviation Safety  
Agency

**BFU:**  
Bundesstelle für  
Flugunfalluntersuchung

## **/Recommendations emerging from Incidents**

### **■ Availability**

- of Type I Fluids at aerodromes

### **■ Operators**

- of vulnerable aircraft use Type I (in a 2-step procedure)
- adopt procedures for application, inspection and cleaning

### **■ Manufacturers**

- issue guidance for application, inspection and cleaning

### **■ Service providers**

- to be certified/approved

### **■ Service personnel**

- to be licensed, trained and supervised

### **■ Fluids**

- standardised specification and certification

### **■ New fluid design**

## /History

### ■ History of the previous reactions of the industry and authorities:

- 2004/2005
  - AAIB & BFU **Incidents Investigation Reports** and Safety Recommendations to CAA & LBA
- 2006
  - Winter Operations Workshop Basel – **Industry calls to EASA**
  - **EASA SIN** No. 2006-09 issued 26 September 2006
- 2007
  - **EASA A-NPA** No 2007-11 and CRD
- 2008
  - **EASA SIB** No. 2008-29 issued 04 April 2008
- 2009
  - **EASA NPA** No. 2009-09 – **AMC to Part-M and Part-145** (inspections & cleaning)
  - TC Holders – Information: fluid application & maintenance programmes

**AAIB:**  
Air Accidents  
Investigation Branch

**BFU:**  
Bundesstelle für  
Flugunfalluntersuchung

**CAA:**  
Civil Aviation Authority

**LBA:**  
Luftfahrtbundesamt

**EASA:**  
European Aviation Safety  
Agency

**SIN:**  
Safety Information Notice

**A-NPA:**  
Advance-Notice of  
Proposed Amendment

**CRD:**  
Comment Response  
Document

**SIB:**  
Safety Information Bulletin

**NPA:**  
Notice of Proposed  
Amendment

**AMC:**  
Acceptable Means of  
Compliance

**TC:**  
Type Certificate

## /The EASA action plan

### ■ This project is one of 6 medium and long-term actions:

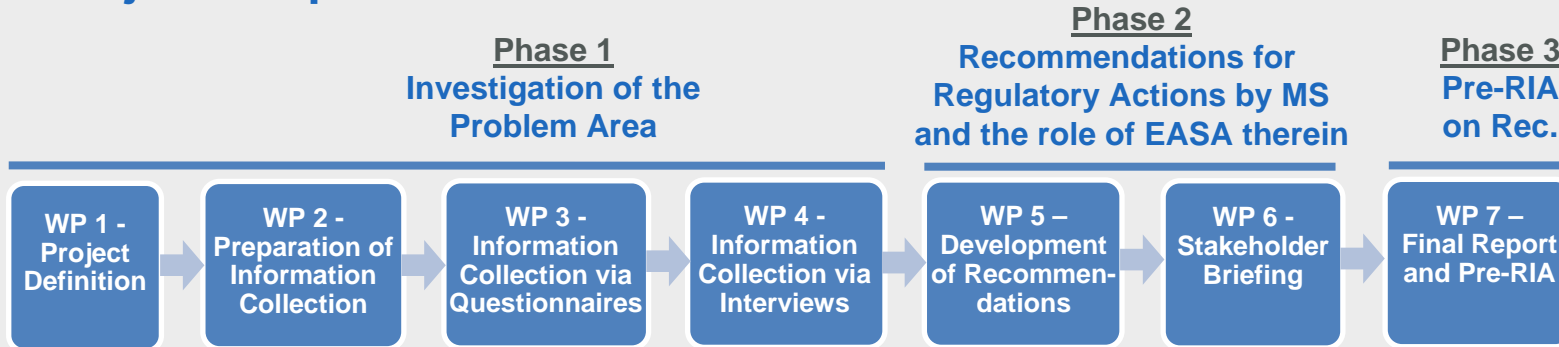
1. Follow SAE Committee and subgroups on this subject and provide input as necessary (long-term).
2. Evaluate the feasibility of introducing in CS23 and CS25 a criterion for establishing sensitivity to fluid residues (long-term).
- 3. Investigate and recommend the means by which Aviation Authorities of Member States manage matters with respect to the certification of service providers, availability of fluids at aerodromes, etc (medium-term).**
4. Make provisions in the **implementing rules on the safety of aerodromes** with a view to make the operations of de-ice/ anti-icing service providers safer and ensure the availability of fluids (medium-term).
5. **Consider input from stakeholders** regarding amendments to the operational rules on deicing/anti-icing (medium-term).
6. **Extend the Agency's remit to fluids and materials** in addition to parts and appliances (long-term).

**EASA:**  
European Aviation Safety  
**SAE:**  
Society of Automotive  
Engineers  
**CS:**  
Certification Specification  
Agency  
**BFU:**  
Bundesstelle für  
Flugunfalluntersuchung

## /Project Overall Objectives

- **Investigate** and **Recommend** the means by which the **Aviation Authorities** of Member States manage matters with respect to the **certification of service providers, availability of fluids** at aerodromes, etc (medium term).
- The Agency is “looking for” a **voluntary harmonised regulatory approach** to the service providers and to **achieve the availability of fluids** at aerodromes.

## /Project Scope and Structure



- Overview over **Regulatory Approaches** in Member States towards service providers, incl.
  - ground handlers' market access
  - occupation health & safety
  - licensing or training
  - quality assurance
- Overview over **Fluid Availability on aerodromes**

- Considering **Implementation strategy of recommendations** via:
  - Industry self-regulation
  - NAA adoption of common standards
  - EASA regulations

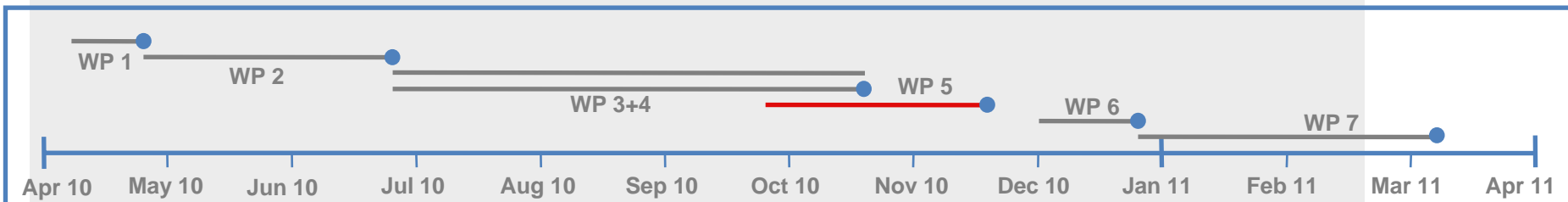
- Considering
  - Safety
  - Economic
  - Social
  - Environment
  - Regulations
- **Cost estimation:**
  - Establishment of airport's new De-icing/anti-icing operations
  - Providing additional Type I fluids

**EASA:**  
European Aviation Safety

**MS:**  
Member States

**NAA:**  
National Aviation Authority

**RIA:**  
Regulatory Impact Assessment

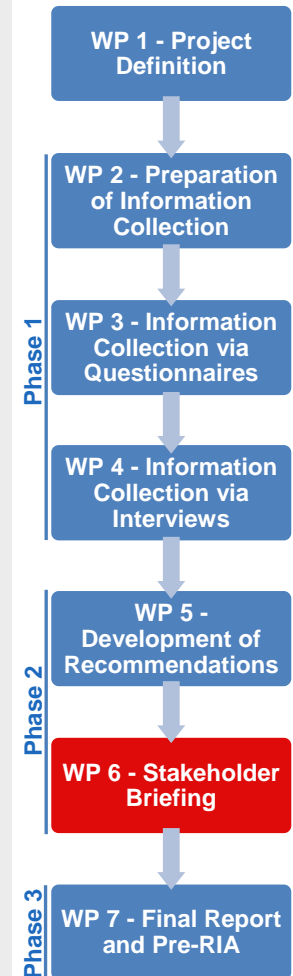


## /Current state and next step *Work-Package 6 - Stakeholder Briefing*

- Presentations of the “Options for action” to Stakeholders, in order to gather comments, opinions and feedback prior to the drafting of recommendations
  - 06.12.2010; 10:00 – 17:00; Cologne
  - Information Papers to be distributed to delegates before Briefing
- A “**Post-Meeting Comment Response Document**” will be proposed after the Briefing for the attendees to provide further comments and feedback

### ■ More Information:

- [www.airsight.de/de-icing](http://www.airsight.de/de-icing)



OEM:  
Original Equipment  
Manufacturer